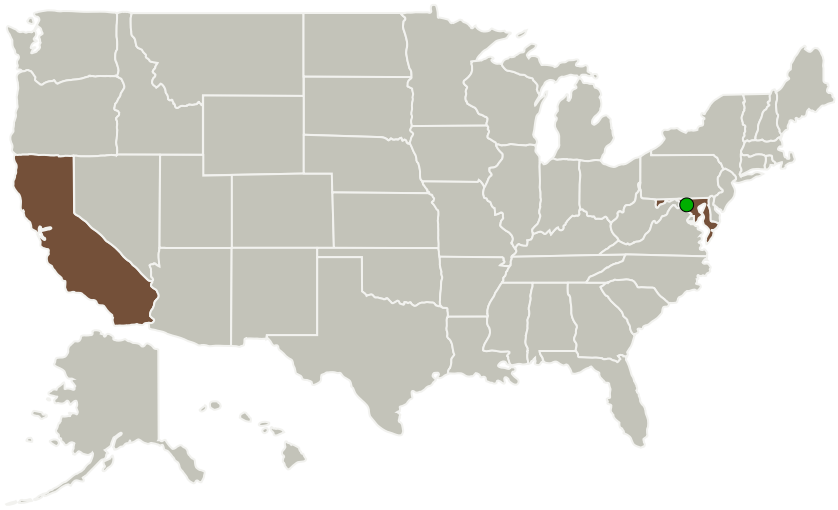
Framework for the Design and Implementation of Fault Detection and Isolation, Phase II

Completed Technology Project (2014 - 2017)

Project Introduction

SySense, Inc. proposes to develop a framework for the design and implementation of fault detection and isolation (FDI) systems. The framework will include protocols which define how to work with an end customer so that an FDI system may be developed for a wide range of autonomous satellite, rocket, air, land, and underwater vehicle missions. The framework will define what kinds of data and information are needed a priori in order to design the FDI system, what kinds of mission requirements can be answered with the system, and how the system should be implemented in order to meet those requirements. The framework will also include the procedure to facilitate the efficient integration of our FDI methodology into both existing and planned systems. Clearly defining the FDI design process through this framework will make the technology more accessible to mission designers and lower the cost of implementation, providing more opportunities to apply this technology. The efficacy of the framework will be confirmed by designing and implementing collocated and non-collocated FDI systems for a representative satellite mission. The framework will also include introductory tutorial material designed for mission planners.

Primary U.S. Work Locations and Key Partners



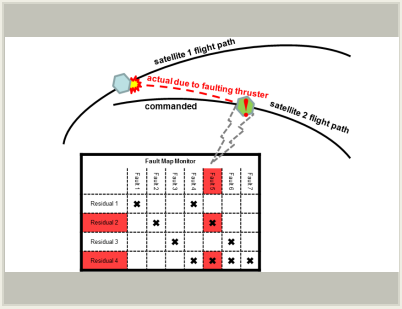


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Table of Contents

Small Business Innovation Research/Small Business Tech Transfer

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Completed Technology Project (2014 - 2017)

Organizations Performing Work	Role	Type	Location
SySense, Inc.	Lead Organization	Industry	El Segundo, California
Goddard Space Flight Center(GSFC)	Supporting Organization	NASA Center	Greenbelt, Maryland

Primary U.S. Work Locations	
California	Maryland

Project Transitions

April 2014: Project Start

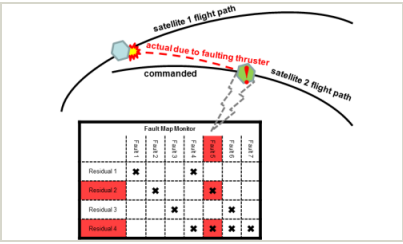
June 2017: Closed out

Closeout Summary: Framework for the Design and Implementation of Fault De tection and Isolation, Phase II Project Image

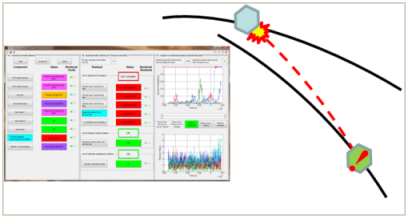
Closeout Documentation:

- Final Summary Chart Image*(https://techport.nasa.gov/file/137460)*

Images



Briefing Chart Image
Framework for the Design and Implementation of Fault Detection and Isolation, Phase II
(https://techport.nasa.gov/image/136782)



Final Summary Chart Image
Framework for the Design and Implementation of Fault Detection and Isolation, Phase II Project Image
(https://techport.nasa.gov/image/134310)

Organizational Responsibility

Responsible Mission Directorate:
Space Technology Mission Directorate (STMD)

Lead Organization:
SySense, Inc.

Responsible Program:
Small Business Innovation Research/Small Business Tech Transfer

Project Management

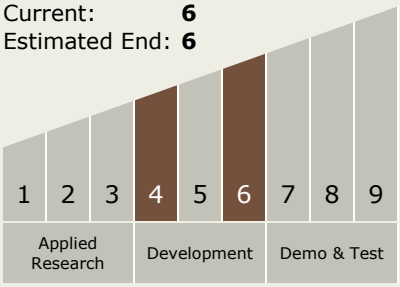
Program Director:
Jason L Kessler

Program Manager:
Carlos Torrez

Principal Investigator:
Emmanuell A Murray

Technology Maturity (TRL)

Start: **4**
Current: **6**
Estimated End: **6**



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Completed Technology Project (2014 - 2017)

Technology Areas

Primary:

- TX17 Guidance, Navigation, and Control (GN&C)
  - TX17.2 Navigation Technologies
    - TX17.2.3 Navigation Sensors

Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System